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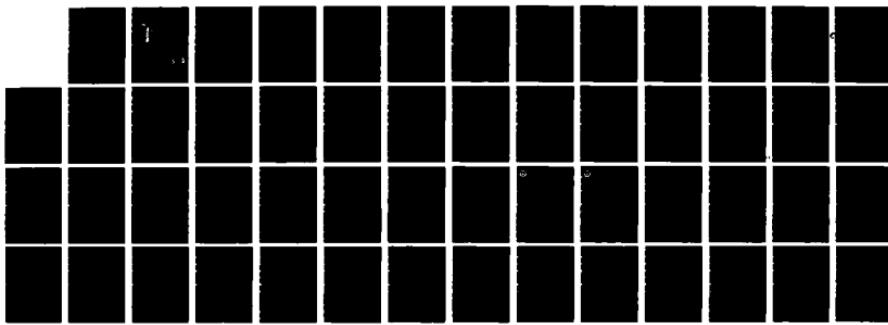
REPORT OF PANEL ON PROCESSING REQUIREMENTS DOCUMENTS
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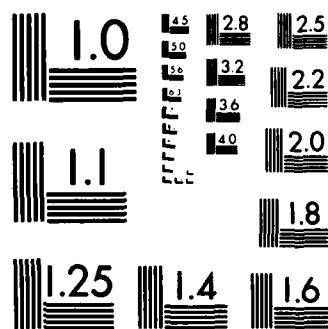
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WASHINGTON, D. C. 20310

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REPORT OF PANEL

ON

PROCESSING REQUIREMENTS DOCUMENTS STUDY

September, 1984

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An Army Science Board Panel was appointed to address the inordinate amount of time required, within the Army, to prepare and process requirements documents. An assessment was made of the strengths and weaknesses of the present process. Where applicable, recommendations have been made to correct weaknesses and streamline the process.		

THE PROCESSING REQUIREMENTS DOCUMENTS STUDY

INTRODUCTION

The Commanding General of TRADOC has believed for a considerable period that the time required to formulate and coordinate requirements documents was far too long. During the spring of 1983 General Richardson began to determine the best means of investigating procedural changes that would allow substantial reductions in the document processing time.

While recognizing the necessity for involving AMC and Hq Dept. of Army, it was felt that proposals for reductions in document processing time should emanate from TRADOC. After considering other alternatives it was determined that the study was best accomplished by the Army Science Board (ASB). The study terms of reference and participants are shown at Enclosure 1. The effort was begun in early December, 1983, but was set aside by mid December, 1983 to allow completion of a more time sensitive analysis by the same member of the ASB. The analysis effort was resumed in March, 1984, and a draft report was completed in April, 1984.

Dr. Richard J. Trainor was the chairman of the panel and its only member. Due to his familiarity with the subject matter, much of the analysis effort involved his familiarization with the changes in the process over the past four and one half years since he terminated employment with the government. Refamiliarization concentrated on discussions of weaknesses in the acquisition process with key managers within TRADOC and at Hq, Dept. of Army. In addition, Army Regulation 71-9 (Force Development Materiel Objectives and Requirements, July, 1983, Final Draft) and the recently updated DARCOM - TRADOC Pamphlet 70-2, dated 20 January 1984 (DARCOM - TRADOC Materiel Acquisition Handbook) were reviewed.

With this background in mind, an assessment was made of the strengths and weaknesses of the present process. In interest of brevity, the discussion that follows concentrates on weaknesses in processing procedures and related management actions. Where applicable, recommendations have been made to correct weaknesses remaining after considering corrections in the latest version of Pamphlet 70-2. Tentative recommendations were discussed informally with several key people in AMC, TRADOC and at the Dept. of Army level and then were reviewed by an ASB Ad Hoc Review Group. The Ad Hoc Review Group was comprised of the following members of the ASB:

LTG Robert J. Baer, (USA Ret)
Dr. Seth Bonder
Mr. Abraham Golub

Dr. Bonder, Mr. Golub and Dr. Trainor met with MG Carl McNair and Mr. Seymour Goldberg of Hq TRADOC on 29 August 1984. (LTG Baer's comments were provided separately.) The remainder of this paper has had the benefit of their considerable insight, and modifications from earlier drafts have been made as a consequence of their review. However, the review by the Ad Hoc Review Group should not be interpreted as constituting their endorsement of the recommendations described in the following pages.

SEVERITY OF THE PROBLEM AND PROBABLE CONSEQUENCES

Pamphlet 70-2 outlines the procedures to be followed in formulating and coordinating requirements documents (JMSNS, LOA, ROC, LR, TDRs, etc.). There are time constraints imposed on the process. For example, Chapter 6.3 of Pamphlet 70-2 indicates that 180 days are allocated for processing a ROC. However, the 180 days begin as the Joint Working Group prepares the second draft and ends when the document is forwarded to DA for approval. Obviously, the total time from the time of the agreement to write a ROC until its approval, is expected to be considerably more than 180 days.

Of greater significance is that there appears to be no discernable relationship between the expected time and the actual time to formulate and coordinate a ROC, LR, LOA, or any of the other documents. Instead, based on a sample of 20 requirements documents, Hq TRADOC estimates that it takes between 20 and 50 months to formulate and coordinate a requirements document. This period of time seems incredibly long, but it does represent the best estimate of Hq TRADOC personnel responsible for document processing. However, it should be recognized that this average can be misleading. TRADOC is fully capable of processing high priority documents in a fraction of the average processing time.

TRADOC has not performed any specific analysis of the undesirable effects of the long period of time required to formulate and coordinate documents. However, this subject obviously is of concern to the present TRADOC commander, as it must have been to prior commanders. Undesirable consequences presumably include the following:

- The increased likelihood of technological obsolescence caused by the long and unpredictable period of time.
- The difficulty of coordination by private industry of IR&D efforts to match emerging Army requirements.
- The lessened likelihood of the resulting system's capabilities matching the enemy threat.

- The loss of credibility of the Army in defending the urgency of a requirement when so many months have been involved in its formulation.
- Probable delays in the fielding of needed systems.
- For requirements that are supporting elements of larger systems, the likelihood of delays in fielding the support systems. (Training devices in particular, seem to be beset with this problem.)
- The large amount of manpower expended in writing and coordinating documents over a long period of time. This problem is compounded by personnel turnover.

On balance it seems clear that the long period of time required by the current procedures causes many serious side effects. Fundamental changes should be seriously considered.

ENDEMIC CONDITIONS

There are many factors influencing the requirements process that relate either to the nature of the Army or to government policy beyond the scope of this study. Four of these are listed for sake of clarity, even though little or no change in these conditions can be expected.

- Condition 1 The division of authority and responsibility between TRADOC and AMC is assumed to be unchanged.
- Condition 2 The division of authority and responsibility between TRADOC and Hq Dept. of Army is assumed to be fundamentally unchanged. One exception to this principle may be the proposed delegation of approval authority for requirements of greater dollar value than is presently the case.
- Condition 3 The performance, characteristics and schedules of many Army systems are interrelated with the requirements for other systems.
- Condition 4 The required performance characteristics of many Army systems, when considered in context of quantitative and projected Army budgets, indicates that some of the lower priority systems are not affordable.

SYSTEMIC WEAKNESSES

Study of the procedures used for preparing and coordinating requirements documents indicates several weaknesses. The weaknesses are listed in the same order later in this study

for a more extensive discussion of the weaknesses and avenues of possible improvements. The order does not relate to the relative importance of each area of weakness.

- Weakness 1** The Army has a large and bewildering set of nomenclature to identify its various requirements documents.
- Weakness 2** There is no specific page count limit on requirements documents.
- Weakness 3** The procedures required to formulate and coordinate documents for simple, low cost items are often nearly as complex and time consuming as the procedures for major weapon systems.
- Weakness 4** The requirements documentation does not evolve and mature in parallel with the development of the materiel. As a materiel item progresses to a new phase of its development, sometimes much of the paperwork is discarded and replaced by a new process -- often written and coordinated by new, untrained personnel.
- Weakness 5** Documents are processed for a large number of relatively minor materiel items. However, the rank and grade of personnel formulating and coordinating requirements for minor systems is the same or similar to the rank and grade of those working with major weapon systems.
- Weakness 6** The concept of dollar value as a means of distinguishing between types of requirements documentation is desirable but is applied inconsistently and without recognition of exceptional cases, such as ammunition items which may have low unit cost but high total procurement cost.
- Weakness 7** Zealous compliance with undesirably complex and redundant procedures causes a great deal of time to be consumed in the coordination process.
- Weakness 8** Requirements documents presently require more information with respect to the details of system concepts than can reasonably be expected at the time an LOA is formulated.
- Weakness 9** Hq TRADOC does not employ a system to determine the actual time required to formulate and coordinate requirements documents. Consequently, Hq TRADOC is unable to ascertain the major causes of delays in processing documents.

- Weakness 10** Private industry does not have a convenient method of tracking the status of requirements documents.
- Weakness 11** Hq TRADOC does not have a suspense system to assist in assuring the meeting of deadlines.
- Weakness 12** Early developmental and operational testing is not always responsive to the needs of the program manager and the TRADOC system manager and as a consequence may unnecessarily lengthen the overall development cycle.
- Weakness 13** Operational effectiveness analyses can cause time delays and expenditure of effort not always commensurate with the value of the results attained.
- Weakness 14** Cost analyses are performed with an undesirably high degree of precision and detail too early in the requirements formulation process.
- Weakness 15** TRADOC is too dependent on AMC for technical assessments.
- Weakness 16** Typically, each development is authenticated by a separate requirements document. For systems using closely related technologies this leads to an undesirable level of document redundancy.
- Weakness 17** The present procedures do not provide an avenue to allow broad proliferation of technological advancements when these advancements emanate from special security access programs.
- Weakness 18** TRADOC suffers a comparative disadvantage in the requirements process in that TRADOC assigns junior people to the requirements process. Moreover, these junior TRADOC personnel have high turnover rates in comparison to their AMC counterparts.
- Weakness 19** TRADOC does not always assign the best quality of officers to the requirements process.

PROPOSED BASIC CHANGES TO THE REQUIREMENTS FORMULATION AND COORDINATION PROCESS

The following paragraphs describe a basic change to the requirements procedure. It is described before a discussion of systemic weaknesses because it is felt that acceptance of these basic changes is central to correction of the other procedural problems.

Proposed System

The proposed system would use the acronym word "ROC" as the base word. Levels 1, 2, 3 and 4 will designate the importance of the system and is related to the dollar value required to acquire the system. The proposed levels are:

Level 1 - \$200M RDTE - or \$1B Proc
Level 2 - \$100-200M RDTE - or \$200M-1B Proc
Level 3 - \$25-100M RDTE - or \$50-200M Proc
Level 4 - \$0-25M RDTE - or \$0-50M Proc

As will be discussed later, the dollar levels are not the final determinant of whether a system is to be level 1, 2, 3 or 4. The final determination is to be made by TRADOC and ODCSOPS management, using the dollar value as an important input.

The third aspect of the nomenclature relates to the status of development of the system and the documentation/coordination required before the system proceeds to the next stage in its acquisition cycle. There will be three stages of acquisition recognized as follows:

- "A" would be the nomenclature used for approval to enter the concept exploration phase. It should be clearly understood that this means the formulation and approval of a ROC "A" will occur much earlier in the acquisition process than is the case with the LOA. On the other hand, the proposed ROC "A" document will be considerably shorter, and will contain less details than an LOA. The ROC "A" is to be the requirements document used for all developmental efforts prior to approval of a ROC "B." As the system concepts proceed during Advanced Development a great system of knowledge will be gained and documented with respect to the developer's ability to satisfy the users' needs as stated in the ROC "A." However, it is intended that this additional information be conveyed to the decisionmakers by other means. There should be no need to continually update a correctly worded ROC "A" until it is replaced by a ROC "B."
- "B" would be the nomenclature used for approval to enter the Full Scale Development phase.
- "C" would be the nomenclature used for approval to begin full scale production and deployment.

Table 1 summarizes the proposed nomenclature for the document system intended to replace the existing system.

TABLE 11/
RECOMMENDED REQUIREMENTS DOCUMENTS NOMENCLATURE

	NOMENCLATURE USED TO OBTAIN APPROVAL TO CONDUCT CONCEPT EXPLORATION PHASE	NOMENCLATURE USED TO OBTAIN APPROVAL TO ENTER THE FULL SCALE DEVELOPMENT/ LIMITED PRODUCTION PHASE	NOMENCLATURE USED TO OBTAIN APPROVAL TO ENTER THE FULL SCALE PRODUCTION/ DEPLOYMENT PHASE
ROC-1 > \$200M RDTE or > \$1B Proc ^{2/}	ROC-1A	ROC-1B	ROC-1C
ROC-2 \$100-200M RDTE or \$200M-1B Proc ^{2/}	ROC-2A	ROC-2B	ROC-2C
ROC-3 \$25-100M RDTE or \$50-200M Proc ^{2/}	ROC-3A	ROC-3B	ROC-3C
ROC-4 \$0-25M or \$0-50M Proc ^{2/}	ROC-4A	ROC-4B	ROC-4C

- 1/ A letter "D" prior to "ROC" may be used to denote the word "draft."
 2/ The values are used as guidance and are not directive. For example, higher procurement values can be used when the unit costs are low and production rates are high (ammunition) or if the bulk of procurement dollars are beyond the FYDP period.

Proposed Responsibilities

For preparation of and coordination at command level - TRADOC in coordination with DARCOM and INSCOM as necessary.

For transmittal to DA Staff - TRADOC.

For informing MACOMs - TRADOC.

For coordination at Army Staff - ODCSOPS.

For modification and submittal to OSD - ODCSOPS in coordination with TRADOC and ODCSRDA.^{1/}

ROC-1A

Documents Assumed to Exist

Documents related to this subject area which are assumed to exist prior to initiation of this requirements document are:

Mission Area Analyses, Mission Area Development Plan
Battlefield Development Plan, and
Research, Development, and Acquisition Long Range Plan.

Included Contents

- Description of basic deficiency/deficiencies, the manner and extent to which this problem area has been addressed in the past, the probability of its continued existence, and the consequences of its continued non-resolution.
- The extent to which this problem can be resolved by intensification of training, changes in doctrine, tactics, better use of existing equipment, or modest modification of existing or programmed equipment of the Army or other military services.
- The nature of the threat, the rapidity of changes to the threat in the past, and the extent to which changes in the threat might cause any new developments to become obsolete.
- The type and numbers of concepts to be investigated and a rough assessment of the technical risk, and the IOC of each. A major product improvement of a fielded

^{1/} It is intended that a ROC-1A, when approved by ODCSOPS with little change, may be submitted to OSD as the Justification for Major System New Start (JMSNS).

system should either be included as a concept, or, if not, the specific basis for its exclusion should be provided.

- The ROC-1A document should indicate, to the extent information is available, the organizational and operational concept (not an O&O plan) for each system concept to be examined.
- The user should indicate, to the extent data is available, the anticipated contribution of the developed system to increasing the Army's effectiveness. For example, the user may require a probability of kill of a certain amount, a certain rate of fire, or require the ability to defeat from any aspect the projected Soviet tank threat. In some cases the user may be able to best articulate his needs in terms of a certain percent improvement of selected performance and characteristics of a currently fielded system. If so, an indication of tradeoffs between key performance and characteristics is very desirable. The user should be very careful not to state his requirements in a manner that prohibits the developer from considering alternative technology. For example, a requirement for an air defense system should not state an implicit requirement for a gun system versus a missile by defining the number of projectiles per minute. The number of kills per basic load or per unit time period would be the preferred way of stating the requirement in this instance.

Bands may be used to indicate required capabilities. If so, the lower band should be placed at a level below which the user would feel the overall system is unacceptable. The center of each band should represent a value the user will accept and the developer expects to be able to achieve within the specified costs schedules and risks. The upper band should be attainable for a very successful development program but this assessment should also be within the context of the specified funding constraints and IOC.

- Funding data as available. Cost estimates and quantitative requirements should be carefully caveated.

Coordination

All major commands will be informed of the intent to write a ROC-1A document. By this means they may indicate their desire to participate in its preparation. However, most major commands, to include overseas commands, will not be requested to coordinate on the details of the contents of a ROC-1A document. (See Weakness 7, later in this report, for further discussion.)

ROC-1B

The ROC-1B document represents the joint view of the users, (with TRADOC as the principal spokesman), and AMC as the developer as to the required performance of the system when it reaches maturity.

Normally, only a single system concept will enter Full Scale Development. Therefore, ROC-1B requirements will be stated in operational terms and in terms of performance and characteristics as appropriate. Performance and characteristic values will normally be expressed as bands, but these bands will be narrow as opposed to the broad bands in a ROC-1A. When performance values are expected to change during the early years of fielding, e.g., RAM values, separate values may be shown for early fielding dates and for a mature system. Values at the center of the band should be consistent with test values. Values at the lower end of the band imply the lower limit of user acceptability of the system. Values at the upper end of the band are the best that can be reasonably expected in context of the development and production costs, fielding plan, ILS plan, etc. Point estimates may be used for values of lower significance or where there is no difference of opinion between the developer and the user.

Included Contents

- Threat estimate, updated from ROC-1A.
- Required performance and characteristics of operational system.
- Complete O&O plan.
- Technical risk assessment.
- Detailed cost estimate assuming realistic affordable development schedule and production rates.
- Test Results.
- Results of COEA as appropriate.
- Complete details of ILS plan.
- Acquisition plan.
- Basis for choice of system to enter E.D.
- IOC.
- Plan for P³I.

ROC-1C

A decision to enter FSD is also a de facto decision to proceed into full scale production. Ideally, when this milestone is reached the ROC-1B can be redesignated ROC-1C to recognize its new acquisition phase. However, if the threat, performance, costs, schedule, or risk have been substantially and adversely impacted, the program should be reviewed. A review of the nature and extent of the changes since ROC-1B approval should assist Army management in determining whether a formal milestone review of the program is required.

ROC-2A,B,C

ROC-3A,B,C

ROC-4A,B,C

In the interest of brevity the discussion of the contents of ROC 2, 3 and 4 are not described at this time. In general, they would follow the format of a ROC-1 but would be shorter in length, may be approved at lower organizational levels and should be prepared in a shorter period of time. It should be noted that since ROCs 2, 3 and 4 involve less development cost than a ROC-1, the likelihood is increased that a product improvement, modification of commercial equipment or a nondevelopmental item can solve the requirement. Therefore, the contents of these documents should provide appropriate assurances that these avenues have been explored. It should also be noted that for a ROC-2, 3 and 4 there is an increased likelihood that one of the ROC stages can be omitted. For example, for a ROC-3 or a ROC-4 it may be possible to proceed directly into FSD after a short preliminary investigation. The procedures should permit this flexibility.

DISCUSSION OF CONDITIONS/WEAKNESSES

The conditions and weaknesses listed earlier will now be discussed in the order in which they were listed.

Condition 1 AMC - TRADOC Authority Relationship

This study does not propose any changes in the relative authority of AMC and TRADOC. However, many of the recommendations are oriented to improving TRADOC's ability to perform those presently assigned functions which interface with AMC.

Condition 2 TRADOC - Hq, Dept. of Army Authority Relationships

This study proposes no change in TRADOC - Hq, Department of Army authority relationship, except one. Presently, LOAs whose Advanced Development cost exceeds \$25 mil requires Hq, Department of Army approval. Hq, Department of Army has in draft a proposal to raise the \$25 mil limit to \$50 mil. This

study proposes TRADOC be granted authority to authenticate requirements whose total projected RDTE cost is less than \$100 mil. Since Full Scale Development normally consumes more funds than Advanced Development it is unclear as to whether, on the average, this would pass more authority to Hq Department of Army (ODCSOPS) or to Hq TRADOC. Clearly, it would vary on a case-by-case basis.

Condition 3 The Requirements of Many Systems are Interrelated

For various reasons many Army materiel items must interrelate technically and operationally with other materiel items. For example, the GLLD must interrelate with the HELLFIRE and the COPPERHEAD, even though these systems are covered by separate requirements documents. There are no procedural recommendations that relate to this type interaction except the need for close coordination among AMC and TRADOC subordinate commands. The proposed standardized ROC document format (proposed resolution of Weakness 1) will assist in assuring that system interrelatedness is understood and treated appropriately.

There are two other kinds of system relatedness that involve the documentation process. The first of these relates to a subsystem of a major system. The subsystem documentation should be integrated with that of the main system if at all possible. Considerable effort should be made to identify potential subsystem requirements when the system requirement is being formulated. For example, a STINGER training device requirement should be documented as a part of the STINGER documentation, not separately.

If a subsystem is common to two or more weapon systems its documentation should be a part of the first of the major systems to be documented. For example, the PNVS requirement should be part of the AH-64 requirement. When and if it is used for the UH-60 (or other helicopters) the documentation for the UH-60 need only reflect the basis for its use on the UH-60. Specifications common to both the AH-64 and the UH-60 need merely be referenced back to the AH-64 ROC, when documenting the UH-60 requirement.

When a subsystem is identified after the parent system requirement is documented and approved, the subsystem requirement can be treated as an appendix to the approved ROC. The appendix would normally be only 1-3 pages but in no case should it be more than 1/3 the page count allocated for major systems. This subject is also addressed in the resolution of Weakness 2.

Condition 4 Lack of Affordability of Army Systems

Many would agree that there is often a disconnect between the cost of Army materiel systems and their overall

affordability when viewed in context of meeting quantitative requirements. This is a serious problem and has a substantial impact on the overall acquisition cycle. However, the subject is beyond the scope of this study. The recommendations in this study will have little or no impact on the affordability of Army systems.

Weakness 1 Proliferation of Nomenclature

The requirements related nomenclature in use today within TRADOC, AMC and ODCSOPS is bewildering. The names indicate no consistent taxonomy. Examples of the diverse origins of the nomenclature are:

- Nomenclature indicating status of requirements document.
- Nomenclature indicating approval procedures.
- Nomenclature indicating development status of the system.
- Nomenclature indicating the intended use of the system.
- Nomenclature distinguishing major systems from non-major systems.
- Nomenclature continued in use even though replaced by a new reference system.

Overall there are in excess of twenty different names used to denote requirements that are either approved or are somewhere in the approval process. Following are examples of symbology related to requirements documents within TRADOC. (Many of these acronyms are no longer in use. However, they are still on the books within TRADOC.)

ROC, PROC, DROC
LOA, PLOA, TDLOA
LR, DLR
MENS, MN, MNED, MNA, MNPI
QMR
QRP
QRC
JSMN, JMSNS
JOR, JSOR
SDR
PIP
SN-CIE
Study
Review
TELER

The problem associated with proliferation of nomenclature is not merely cosmetic. If an Army requirement is to have "clout" it should be termed a "requirement," not an objective, a letter or a product improvement.

Resolution of Weakness 1

Implement the ROC A, B, C system described earlier and this weakness will be eliminated for future ROCs.

Redesignate the documents presently being processed within TRADOC to be compatible with the new nomenclature. However, there is no need to review the files in TRADOC to update inactive documents.

Reexamine the need for edited procedures for organizations such as the High Technology Test Bed (HTTB) in light of the recommendations in this study. If possible, edited procedures should be avoided, instead giving a higher priority to the processing of requirements documents emanating from organizations such as the HTTB.

Weakness 2 No Page Limit on Documents

The concept of imposing a page count limit on documentation can be, and has been, argued both ways. On one hand it can be argued that it is sometimes more difficult to describe a system in four pages than if ten pages were allowed. While this argument has merit, failure to impose a page count limit causes requirements documents to become too detailed too early in their life and to become unbalanced with respect to subject matter. Most importantly it causes documents to be merely scanned instead of being read thoroughly and understood completely.

To illustrate the imbalance in document contents, Hq TRADOC provided a ROC for a Personnel Locator System as an example of a good ROC. (The Personnel Locator System is a new development item, a "black box," to be mounted on Army utility helicopters.) In fact, the basic ROC was four pages long and was well written. However, Appendix I (Life Cycle Cost Assessment) was 1-1/2 pages. In addition to Appendix I there were four annexes, 2-1/2, 3, 2 and 19 pages long, respectively. Annex D was the RAM rationale and was 19 single-spaced pages. One could well ponder the need for a 19 page RAM annex for a nondevelopmental item costing "approximately \$25,363 each."

It should be recognized that Hq TRADOC provides guidance as to the appropriate length of requirements documents. However, the guidance is seldom taken. Experience of the writer is that goals will not be adhered to and that page count limits must be strictly enforced. One of the most effective system-related documents in the DOD was the DCP,

when it was known as the Development Concept Paper. The DCP's page length, to include all appendices, was strictly limited to 20 pages. Its utility diminished greatly when the page count restriction was lifted. Soon it became a much longer document, unread by most decisionmakers.

Resolution of Weakness 2

Define a specific page count limit for all ROC documents to include appendices, annexes, enclosures, etc. and enforce this limit without exception. Exclude cover pages and coordination sheets. A suggested page count limit is at Table 2. Page count limits assume 8-1/2" x 11" pages and a requirement for a new system. An add-on subsystem to an existing system (a new training device for PATRIOT or M1, for example) should require no more than one-third the page count limit established for the basic system.

Weakness 3 Process Complexity

The process flow diagrams for JMSNS, ROC, LOA, TDR, and LR are shown at Enclosure 2. The processes cover the gamut from major to minor systems, but the processes are all complicated. In fact the process for a TDR would appear to be more complex than that for a ROC.

Resolution of Weakness 3

Replace the present requirement system with the ROC-A, B, C system described earlier. The process complexity will be substantially decreased by the totality of the recommendations included in this study. To summarize, the overall complexity will be reduced by:

- standardizing the ROC contents
- eliminating the requirement for worldwide coordination on ROC-"A."
- greatly reducing the length of ROC documents, especially ROC "A."
- assuring that the contents of ROC "A" provide less basis for controversy between the user and the developer.
- eliminating early validation of inherently rough costs estimates.
- delaying the creation of organizational and operational plan.
- making COEAs less complex and by the elimination of some COEAs.

TABLE 2
RECOMMENDED REQUIREMENTS DOCUMENTS PAGE LIMITS

	NOMENCLATURE USED TO OBTAIN APPROVAL TO CONDUCT CONCEPT EXPLORATION PHASE	NOMENCLATURE USED TO OBTAIN APPROVAL TO ENTER THE FULL SCALE DEVELOPMENT/ LIMITED PRODUCTION PHASE	NOMENCLATURE USED TO OBTAIN APPROVAL TO ENTER THE FULL SCALE PRODUCTION/ DEPLOYMENT PHASE
ROC-1 <i>> \$200M RDTE or > \$1B Proc^{1/}</i>	ROC-1A <i>6^{2/}</i>	ROC-1B <i>18</i>	ROC-1C <i>18</i>
ROC-2 <i>\$100-200M RDTE or \$200M-1B Proc^{1/}</i>	ROC-2A <i>5</i>	ROC-2B <i>12</i>	ROC-2C <i>12</i>
ROC-3 <i>\$25-100M RDTE or \$50-200M Proc^{1/}</i>	ROC-3A <i>4</i>	ROC-3B <i>10</i>	ROC-3C <i>10</i>
ROC-4 <i>\$0-25M or \$0-50M Proc^{1/}</i>	ROC-4A <i>4</i>	ROC-4B <i>8</i>	ROC-4C <i>8</i>

1/ Higher procurement values can be used when the unit costs are low and production rates are high (ammunition) or if the bulk of procurement dollars are beyond the FYDP period.

2/ Summarize to 3 pages for submitting to OSD as a JMSNS.

- simplifying the coordination process.

The flow diagram at Enclosure 2 will be reduced to a single flow diagram, less complex than any presently shown. Most significantly, the effort required to complete a given step will be reduced. Further, details are provided in a discussion of the remaining weaknesses.

Weakness 4 Process Flow

In the "real world" usually the person or group charged with describing a requirement does not know from the outset whether he is writing an LOA or an LR or whether a system-unique training device will be required. These considerations become more clear as the military requirement moves from a description of the problem to a focus on a plausible set of solutions. When this happens a system thought to require a Letter Requirement may, in fact, require an LOA. A later adjustment of the AAO (or a new cost estimate) can cause the system to become a major program. Conversely, the appropriate technical response may allow a system to be advanced immediately to FSD or alternately to be a PIP of an existing system.

Because of the above factors it is important that the requirements process documentation be similar in nature whether the process relates to a major system or to a non-major system. Additionally, it is important that the system be sufficiently flexible to allow the processing of a new development, a product improvement, or a non-development item. The current system attains this goal to a degree. However, for example, when a system moves from an LOA to a ROC, analysts familiar with the process often claim the current system essentially requires them to nearly start over instead of merely adding to the completeness of the documentation.

Resolution of Weakness 4

Implementation of the ROC-1, 2, 3, 4 system should solve the problem, since the procedures will have a "designed in" similarity of content, format, and approval procedure.

Weakness 5 Delegation of Authority for Document Preparation

The document processing system presently employed does involve a degree of delegation of authority. For example a LOA involving less than \$25M of Advanced Development money can be approved (authenticated) jointly by Hq TRADOC and Hq AMC. Above this dollar level ODSCSOPS approval is required. However, within the TRADOC Centers the procedure for handling a requirements document is essentially insensitive to the importance of the subject matter. Further delegation of authority should be considered.

To put the problem in perspective, TRADOC has in some stage of processing (to include those in an inactive system) 544 requirements documents. These are summarized in Table 3.

Resolution of Weakness 5

TRADOC should consider the delegation of authority for ROC systems as follows:

Recommended ROC Document Preparation Responsibility:

- ROC-1 TRADOC Center Commander (general officer) and AMC counterpart.
- ROC-2 TRADOC Center Director of Requirements (06 level) and AMC counterpart.
- ROC-3 TRADOC Center Deputy Director of Requirements (05 level) and AMC counterpart.
- ROC-4 TRADOC Center Designated Action Officer (04 level) and AMC counterpart.

Recommended ROC Document Approval Authority:

- ROC-1 Hq, Department of the Army and OSD if required.
- ROC-2 Hq, Department of the Army.
- ROC-3 Commanding General of TRADOC.
- ROC-4 Deputy Commanding General of TRADOC.

Weakness 6 Confusing Dollar Guidance

The required RDTE or procurement funds required for a system has historically been used as the basis for determining whether a system was major, non-major, etc. In general, this system works well but has become somewhat overly complicated in recent years. For example, the current regulations provide the following guidance:

- LOA - For Advanced Development costs of greater than \$25M (FY80 dollars), forward to DCSOPS for approval.
For Advanced Development costs of less than \$25M (FY80 dollars), approve at Hq TRADOC.
- ROC - No dollar guidance in PAM 70-2 dated June, 1984, or in Chapter 7 of AR 71-9.
- JMSNS - Over \$200M RDTE or \$1B Proc. (FY80 dollars) according to AR 71-9. No dollar guidance in PAM 70-2.

TABLE 3
REQUIREMENTS DOCUMENTS IN BEING OR IN PROCESS WITHIN TRADOC

ORGINATION ORGANIZATION	QMR	ROCS PROCS DROCS	LOAS DLQAS PLOAS	LR MN & MNEQS DLR	MENS' TDR	TDLR	JSMN JSOR	JOR SDR	QRP, QRC	SN- CIE	PIP, SDR	STUDY & REVIEW	TOTAL	
Air Defense	3	1	1	1	2	6	1						15	
Artillery	9	10	1	3					1				24	
Infantry	9	9	4	2			1				5	1	31	
Armor	5	6	1	1									13	
Aviation	14	5	11	2	7								39	
Signal	4	45	12	31	6		29						127	
Intelligence	2	30	8	1	10		4	1	3	2	6		67	
Transportation		13	2	5	1			1					22	
Medical	11	16	45						2				74	
Engineers	13	12	1	1									27	
Quartermaster	11	7	4										22	
Combined Armor	8	4	4	2									18	
OCS		1	4										5	
Chemical	2	10	8	4			2						26	
Logistics		9	1										10	
Special Forces			6				1		1				8	
ORS			3										3	
D-60			1										1	
SSC											1	1		
HMS		2		3									5	
Mil Police		4		2									6	
TOTAL	8	197	102	129	29	4	17	2	37	2	7	8	2	544

- LR - Less than \$6M per year or \$25M (FY80 dollars) in the FYDP period or less than \$12M procurement for 1 year or \$25M total for FYDP period - according to AR 71-9. PAM 70-2 raises the \$25M to \$50M.
- TDLR - Same as LR.
- TDR - Over \$6M per year or \$25M (FY80 dollars) RDTE or Proc. according to AR 71-9. PAM 70-2 raises this value to 50M.
- CTDR - less than \$3000/unit.
- TDLOA - Greater than \$25M Advanced Development funds.

While the above listing of dollar limits is not complete it does illustrate that dollars per year, dollars per FYDP period, dollars in Advanced Development and dollars per unit are all used as a basis for defining the document categorization.

It is believed the current thresholding system is confusing and can lead to internal contradictions. Moreover, the current system can create an incentive to push a system prematurely into FSD to avoid breaking the Advanced Development threshold. Overall, it would appear that the current system is due for a modest change.

Resolution to Weakness 6

Use the ROC-1, 2, 3, 4 system with the RDTE and procurement dollar guidance over the life of the program as the main features distinguishing between ROC levels.

Hq TRADOC should use the dollar levels as guidance tempered by their judgement as to whether a system should fall into a specific ROC category. For example, in cases where the bulk of the procurement dollars are beyond the FYDP period and yet the total dollar value forces a system into a ROC-2 level it may be better to designate the system to be a ROC-3 system until the program status and cost estimates can become more firm. Another example is where very large procurement quantities of a simple low cost item may force it into an inappropriately high categorization. Alternately, a system with a high developmental risk should be considered for a higher ROC category than the level indicated by the cost estimate, since the cost estimate may not reflect the program's true cost.

Weakness 7 Excessive Coordination of Requirements Documentation

The coordination procedures employed by TRADOC causes the worldwide coordination and recoordination of requirements

documents two to three times even though the documents may have changed very little from prior drafts. Details of these procedures are shown at Enclosure 2. Review of Figure 1 indicates that the coordination process would be a major timeconsumer in the requirements process even if these time constraints were met -- and often they are not met.

Review of the coordination function indicates that the process takes more time than necessary. Further, it seems likely that some of the time is wasted on organizations that are only marginally interested in the requirement or only interested in certain limited aspects of the resulting material item. In particular it would seem that full worldwide coordination begins too early in the process, especially when considered in context of the contents of the proposed ROC-1A, 2A, 3A, & 4A documents.

Resolution of Weakness 7

At the beginning of the preparation of a draft ROC-1A, 2A, 3A, or 4A, a survey of interest in the subject matter should be initiated on a short suspense basis. For example, levels of interest might be:

A Our organization is intensely interested in nearly all aspects of the requirement to include tactics, doctrine, system concepts, and compatibility with other emerging systems. If a working group is required our organization would expect to be invited to provide a member.

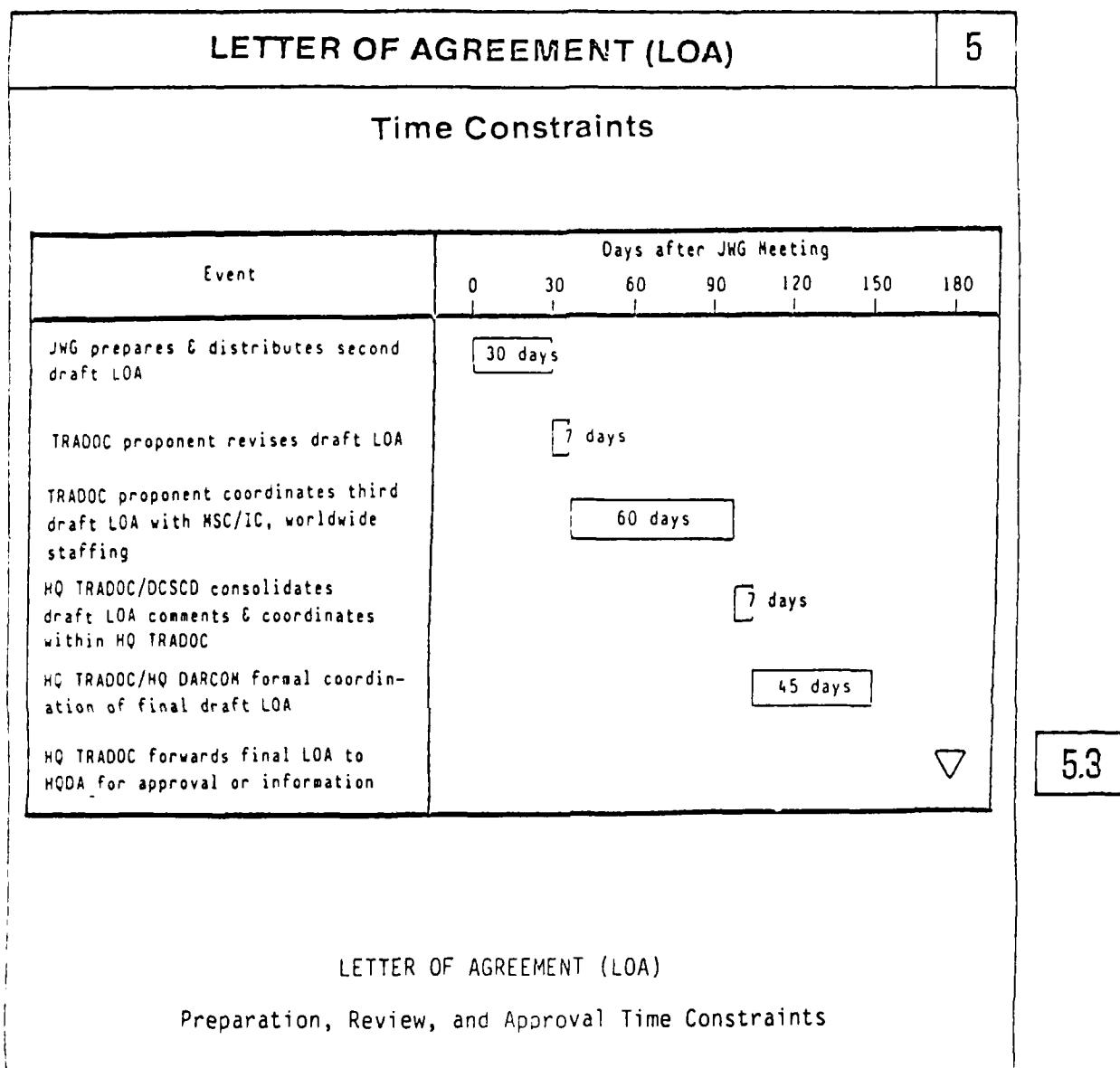
B Since the IOC for this system is several years away our interest is modest at this time. However, we do want you to understand the way we currently solve the deficiency to be treated in this ROC, and want to be sure that the system, when deployed, will be compatible with other systems with which it must interact and will be able to operate effectively in our weather and on our terrain.

C Our interest is only marginal. Unless otherwise advised we wish to merely be informed as to the general progress of the ROC, but do not wish to contribute to the ROC preparation.

D No interest.

In general, for a ROC sponsored by a member of the combat arms team, other members of the combat arms team can be expected to provide an "A" response. Most worldwide major commanders, with USAREUR as a possible exception, will probably often provide a "B" response with others in categories "C" and "D." Assuming this to be the case it is recommended that for ROC 1A, 2A, and 3A, coordination be performed only with organizations in TRADOC and AMC. Others, to include overseas MACOMs, need merely be informed and be provided 10 or so days to send comments if they wish.

FIGURE 1



After the ROC-1A, 2A, 3A or 4A is approved and concept formulation work proceeds, one or two system concepts will tend to emerge as the favored means of satisfying the requirement. Before the selection of concepts becomes a reality and before the system characteristics are effectively frozen, the major overseas users should be briefed and the concepts modified as appropriate. This informal coordination would take place after the approval of ROC-1A, 2A, or 3A, but prior to initiating a draft of a ROC-1B, 2B, or 3B.

For ROCs 1B&C, 2B&C, and 3B&C coordination should be broadened to include all interested MACOMs. ROCs 4A, 4B, and 4C involve relatively small amounts of money, which in turn implies a simple system and/or very limited deployment. In either case coordination can usually be limited to those directly involved.

Weakness 8 Excessive Detail Too Early in the Process

An important cause of delay in the requirements formulation process is the inclusion of too much solution-oriented detail in the requirements documents prepared early in a system's developmental stage. The level of detail in these documents causes several kinds of problems. First, time is consumed by TRADOC and AMC employees in developing the basic data. Second, the level of detail tends to be solution-oriented and is potentially preemptive of the examination of alternative concepts. Third, the excessive level of detail can result in an adversarial relationship among people who should be working in close harmony.

Resolution of Weakness 8

Incorporate an abbreviated O&O concept (but not an O&O plan) as a part of the ROC-1A, 2A, 3A, 4A as opposed to it being a separate document.

Eliminate most estimates of required performance from the ROC 1A, 2A, 3A and 4A. This document should be short and relate to the military requirement and with few exceptions should discuss the possible solutions only in general terms.

Include ranges of values for required performance and characteristics (to include RAM) in ROC 1B, 2B, 3B and 4B. The top of the band should be the performance or characteristics that might be attainable with a very successful development program, but should be considered in context of the IOC and the funds to be provided. The center of the band should be a value the user regards as acceptable and the developer regards as attainable in the context of the funds provided the IOC and assuming low to moderate technical risk. The bottom of the band should be such that values below this level are unacceptable to the user. If the feature is key to the effectiveness of the system the user should be prepared to

cancel the program or delay IOC rather than accept values below this level. Different RAM values may be used for systems shortly after they are developed versus a mature system. Point estimates may be used occasionally in ROC 1C, 2C, 3C and 4C documentation.

Weakness 9 Hq TRADOC Does Not Track Document Status

Hq TRADOC does not keep track of the status of the approximately 544 requirements documents that are somewhere in process at 22 or so subordinate organizations within TRADOC. (See Table 3 for details.) Consequently, Hq TRADOC is unable to easily determine the time required to process documents, the status of the document or to assess the principal causes of delays. In short, even though requirements formulation and coordination is a major TRADOC function, there appears to be a near total absence of centralized control of the documentation process.

Resolution of Weakness 9

There is in existence in TRADOC a computerized report entitled "Status of Materiel Requirements Documents." Apparently this document status report has fallen into disuse. It would appear that with little or no change this reporting system could be used to provide the information base to allow centralized control of the requirements documents process. It should require no more than one person to operate and maintain the document status reporting system at Hq TRADOC. This would seem to be a good expenditure of one man year.

Weakness 10 Industry Does Not Know the Approval Status of Requirements Documents

Private industry, especially the aerospace industry, spends considerable sums of internal research and development money. This money can be spent more effectively if commercial concerns are able to relate the IR&D expenditure by both subject matter and time to emerging Army requirements. However, with the exception of a few high visibility developmental systems, industry is unable to easily check on the approval status of the various requirements documents.

Resolution of Weakness 10

This problem is easily solved, if it is assumed that the resolution of Weakness 9 is implemented. Assuming the existence of a document status reporting system within Hq TRADOC, it should be simple to make a summary report available upon request to industry associations and to individual companies. The report to industry need not forecast the time until the draft requirement is approved or disapproved. Instead the report should only indicate the document's stage in the approval process.

Weakness 11 Hq TRADOC Does Not Have A Suspense System for Requirements Documents Not Meeting Deadlines

Since Hq TRADOC has not implemented a document status reporting system it should come as no surprise that they do not have a document suspense system.

Resolution of Weakness 11

Once the status reporting system is in place TRADOC should consider establishing a document suspense system.

Weakness 12 Testing Performed Early in the Acquisition Cycle Is Not Always Responsive to the Needs of the PM & TSM

Thorough DT and OT testing has become an important facet of the acquisition process. However, sometimes test zealots control the process. Consequently, the fielding of a weapon system can be delayed unnecessarily.

As an example, Sections 14.1 to 14.4 of PAM 70-2 accurately describe the appropriate role of developmental and operational tests. However, Section 14.5 reads in part as follows:

"The final independent evaluation issues and criteria must be approved 19 months before the test date and the DT and OT Test Reports and Independent Evaluation Reports must be delivered to decision review principals at least 45 days prior to the next convening date. In addition, DAPAM 11-25b DA regulations require that the COEA use test data to the greatest extent possible. Accordingly, tests should be scheduled so that their results can be used in the COEA."

From the preceding quote it is not hard to see how, upon occasion, organizations designed to support and assist in the development of major systems can, de facto, be in control of the development schedule. This may not always be to the net benefit of the Army.

Resolution of Weakness 12

To an extent, operational tests are analogous to a report from an independent underwriter. In this sense the OT reports are intended for the consumption of IPRs, ASARCs, DSARCs, etc. However, the DT-I and OT-I tests should be conducted with the understanding that the program manager and the TRADOC system manager are major users of the test results. Early test results, to be of maximum benefit to the PM, the TSM and ultimately to the Army, should provide rapid feedback to the PM and TSM soon after the information is collected and

collated. Usually this will be long before it can be formally approved and documented. Implementation of this recommendation requires a high level of cooperation, flexibility, and an open communication network among the test participants. However, the preceding words are not intended to imply lessened emphasis on the importance of or resource levels applied to DT-I/OT-I testing.

As it applies to DT-1/OT-1, rewrite PAM 70-2 as necessary deleting the reference to 19 months or any other period of like length. Instruct DT-I and OT-I testers to give added emphasis to working in close harmony with the PM and TSM, providing them with early indications of system problems.

Weakness 13 Complex COEAs Sometimes Pace The Development Process^{1/}

Cost and operational effectiveness analyses are intended to assist management in making good decisions. They are often, but not always, useful in this regard. Sometimes decisionmakers are certain as to the need for the system and its specifications. In other instances the measures of effectiveness are, at best, obscure. Still a COEA gets produced because:

- a. that's what the procedure calls for,
- b. it is felt that someone at higher organizational levels will insist on a COEA, or
- c. it might be of use, somehow.

It should be recognized that COEAs are not required by the Office, Secretary of Defense and often are not produced by the Air Force, Navy, or Marine Corps. Therefore, it seems logical that the Army should perform COEAs mainly for its own use, not for others.

In particular, force-on-force analyses are typically quite complex, and yet often are not sufficiently fine grained to be very useful in distinguishing between performance and characteristics of like type systems. To quote PAM 70-2, Chapter 11.8,

"The proponent school conducts the study on the basis of the study plan. Its central components are the

^{1/} It should be noted that not all members of the ASB Ad Hoc Review Group are in agreement with the thrust of this discussion or all aspects of the related recommendations. Further, the reader is cautioned not to infer total Review Group agreement with all other recommendations.

"The proponent school conducts the study on the basis of the study plan. Its central components are the effectiveness analysis based on force-on-force evaluations and the cost information. Best data is used for performance inputs into the effectiveness analysis. Data for analysis include test results and sample data collection results of similar systems. For a Milestone II decision, where most COEAs are used, OT I data should be incorporated. Since a COEA may be a lengthy process and OT I data may not be available until shortly before the review process, it may be necessary to make excursions to band the quantities within which the test data are supposed to fall."

It can be seen from the preceding quote and the related discussion on testing (Weakness 12) that COEAs, especially force-on-force COEAs, can be the controlling factor in the amount of time a system spends in Advanced Development. The utility of COEA results are not always commensurate with the time delay or the manpower expended in their development.

Resolution of Weakness 13

Make the performing of COEAs permissive, not mandatory. As a new system enters Concept Formulation, an ad hoc group should be convened to determine the proposed study approach, the anticipated contribution, cost and required time for the planned COEA. For those COEAs that are approved as a consequence of this "front filter," either establish an agreed-to study period compatible with other system milestones or justify why the COEA should pace the program.

Review, in particular, on a case-by-case basis the expected contribution of force-on-force analyses.

Weakness 14 Time Consuming Cost Analyses

Cost analyses performed early in the development of materiel systems are inherently inaccurate, often by 50 or more percent. Even if the cost analyst performs his function with great precision the analysis can be no better than the specificity of the system design, which is inherently broadly based during concept exploration/demonstration. While a desire for accuracy is admirable it leads to time consuming analysis procedures even though little gain in accuracy is possible.

For analyses performed before the design is frozen (this usually does not occur until sometime during early FSD) the use of a validation stamp on cost analyses is deceptive in that it implies a degree of precision not attainable during that period.

Resolution of Weakness 14

Search for less time consuming analytical methods (parametric techniques) for cost analyses performed during Exploratory Development and Advanced Development.

Discontinue use of the cost validation stamp until the system design is frozen.

Weakness 15 Technical Input to Requirements Documentation Is Undesirably Dependent on the Developer

In general, the personnel assigned by the user have insufficient knowledge of the technical state-of-the-art and the acquisition process in private industry. (There are notable exceptions.) The involvement in the requirements formulation process by private industry is on a rather modest scale and is inhibited by lack of knowledge of the process as well as by conflict of interest considerations. The lack of in-house knowledge and lack of extensive involvement by private industry results in TRADOC depending to an undesirable degree on AMC to provide objective technical expertise. Overall, it would seem to be healthy if the TRADOC technical dependence on AMC was less extreme.

Resolution of Weaknesses 15

Industry input should be sought frequently during the requirements formulation process, especially during the early draft stage for ROC-1B, 2B, 3B, and 4B. This would assist in added realism as to the required funds and specifications for required performance and characteristics. In addition, this process should help surface the existence of commercial products or derivatives of commercial products. Solicitation of industry views must be done in an environment that promotes competitive fairness. This goal may be attained by announcement of intent to solicit industry views through the Commerce Business Daily, industry associations or both of these mechanisms. Legal advice should be solicited to assure that the procedures avoid conflicts of interest or the appearance thereof.

When industry representatives are invited to TRADOC Centers to discuss requirements-related issues, or to market their latest concepts, AMC personnel should be invited to attend.

TRADOC should consider a training-with-industry program so that at least a few action officers at each TRADOC Center have first hand experience with industrial research and development activities.

Weakness 16 Treatment of Closely Related Developments

Occasionally, the Army has situations where research performed during Exploratory Development and the early stages of Advanced Development relate to several different systems. For example, development of a chemical or biological filter materiel could be used in personal protective garments or vehicle filtering systems. Other analogies are possible in the fields of medicine, electronics, water filtration, etc. During the early stages of these developments it is unnecessarily redundant to attempt to write individual requirements documents.

Resolution of Weakness 16

For technologies where the early development effort may lead to families of systems, it would appear to be desirable to develop a "family ROC." (The family ROC concept is presently permitted but is not often used.) Development effort could proceed in 6.2 and 6.3A based on the family ROC. Presumably by the time a specific system, previously authorized by the family ROC, was ready for Full Scale Development a ROC-1B, 2B, 3B or 4B could be written that described the specific end use.

Weakness 17 Technology Requiring Special Security Access

Occasionally, an important technology area will become mature through its use on a "black program," and yet have applicability to an emerging requirement for a "white" program, or another "black" program requiring a different security access. The personnel familiar with the program may be unable to describe and defend the extent of technological maturity without divulging the existence of the "black" program. Yet it seems to be naive to expect the requirements approval system to merely accept "trust me" as the appropriate defense of technological maturity.

Resolution of Weakness 17

The author does not have the appropriate security clearances and is not otherwise sufficiently familiar with the nature and extent of "black" technology programs to offer meaningful suggestions. It is recommended that appropriate Hq AMC personnel provide suggestions as to how "black" technology can be best proffered to the "white" community.

Weakness 18 Low Seniority/High Turnover

TRADOC often assigns relatively junior military personnel to key tasks in the formulation of requirements documents. Typically these people are junior in age, equivalent rank/grade and technological experience. Yet they are supposed to negotiate the required performance and characteristics from a

position of equality with their AMC counterparts. The problem is further exacerbated by the fact that TRADOC personnel change positions more frequently than their AMC counterparts. The result is a distinct experience and seniority imbalance with the scales tipped decidedly toward AMC.

Resolution of Weakness 18

This problem, should be relieved to some extent by recommendations associated with other weaknesses. As a consequence of other recommendations, there should be somewhat fewer requirements documents and those that do exist should be formulated and coordinated in less time. Still, to a large extent, a problem can be expected to remain. TRADOC should attempt to employ people of comparable rank/grade with their AMC counterparts and attempt to stabilize the tours of those formulating requirements documents. It is recognized that TRADOC will require the assistance and cooperation of ODCS PER to achieve this objective.

Weakness 19 Lack of Top Quality Personnel

It is generally agreed by TRADOC action officers that TRADOC does not always assign its best quality officers to the requirements process. While this allegation has not been subjected to analysis, it would not be surprising considering the average length of time to coordinate a requirements document. A top quality officer may logically regard a stabilized assignment in requirements formulation to be a career death knell. Yet, the subject area is a key aspect of TRADOC's mission and of the future effectiveness of Army forces.

Resolution of Weakness 19

Hopefully, in future years requirements assignments will be in demand. If, in fact, less than the best quality of personnel are being assigned to the requirements formulation and coordination process, TRADOC management, in coordination with ODCS PER, should evaluate the potential for improvement. The requirements process would seem to demand the most imaginative, thoughtful, and articulate personnel.

IMPLEMENTATION OF RECOMMENDATIONS

Because the recommendations in this report impact AMC and the Dept. of Army staff it is recommended that the report be briefed to Hq AMC and to ODCSOPS and ODSRDA prior to final TRADOC approval. When agreement among DA, AMC and TRADOC is obtained, the recommendations should be implemented by interim instructions in parallel with the rewriting of the necessary regulations.

It will require several months to rewrite the necessary implementing directives. In particular PAM 70-2 requires rewriting. An interim directive should be capable of being written within a 3 month period by Hq TRADOC if personnel are assigned this duty as a full time task.

This study was performed under the auspices of the Army Science Board and there are distinct benefits that derived through use of the ASB. However, the preceding recommendations did not have the benefit of a data gathering phase to determine in detail how the requirements process presently works. A detailed study of the requirements formulation and coordination process is still warranted. It should be performed in parallel with implementation of the previous recommendations.



DEPARTMENT OF THE ARMY
ARMY SCIENCE BOARD
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, D.C. 20310

7 November 1983

Dr. Richard J. Trainor
President
Trainor Associates, Inc.
Suite 1922
1700 North Moore Street
Arlington, Virginia 22209

Dear Dr. ~~Trainor~~: *Dick*

It would be appreciated if you would chair the Army Science Board Panel on Processing Requirements Documents as requested in the enclosed letter. A participant list is also attached.

You should begin your efforts immediately and submit the draft report by March 1984.

Best regards.

Sincerely,

A handwritten signature in cursive script, appearing to read "Ron".

Ronald A. Mlinarchik
Executive Director

Copy furnished:

GEN William R. Richardson
MG Carl H. McNair, Jr.
MG John B. Oblinger, Jr.
MG Louis C. Wagner, Jr.
COL Bruce H. Ellis
Mr. Seymour L. Goldberg



DEPARTMENT OF THE ARMY
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4 NOV 1983

Dr. Wilson K. Talley
One Clipper Hill
Oakland, California 94618

Dear Dr. Talley:

I request that you appoint an Army Science Board Panel to address the time required within the Army to prepare and process requirements documents. Several Army leaders have expressed concerns that the time required for preparation and approval of requirements documents may be excessive, hence it would be most desirable to have an independent outside assessment of the system, its strengths and its weaknesses. Recommendations for improving the system could pay dividends across the life cycle of the acquisition process.

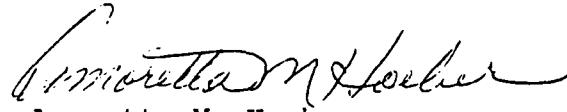
The Panel should address the following tasks:

- Examine the procedures by which the Army develops and coordinates documentation in support of the materiel acquisition process. Documents to be addressed are Justification for Major System New Starts (JMSNS), Letters of Agreement (LOAs), Required Operational Capabilities (ROCs), and Letter Requirements (LRs). Key elements of the examination should be total numbers of documents, actual time required to prepare, and principal causes for delay in the processes.
- Based on this examination, prepare an overall assessment of the current processes to include strengths and weaknesses. Weaknesses should include any aspects of the materiel acquisition process such as testing, contract negotiation or contractor performance, which tend to delay preparation and approval of the requirements documents.
- Develop alternative procedures to correct the weaknesses identified and reduce length of the preparation cycle. Each alternative should be accompanied by an assessment of benefits to be derived from and risks associated with implementation.
- Make final recommendations to include specific changes to existing policies and procedures.

General William R. Richardson, Commander, TRADOC, will serve as sponsor of this study. MG Carl H. McNair, Jr., Deputy Chief of Staff for Combat Developments, TRADOC, and MG John B. Oblinger, Jr., Director of Development and Engineering, DARCOM, will serve as Senior Advisors. Mr. Seymour L. Goldberg, HQ TRADOC, will

serve as the DA Staff Assistant for this effort, and Colonel Bruce H. Ellis, Deputy for Fire Support, will serve as the Cognizant Deputy from my office.

It would be appreciated if the panel would begin its efforts immediately and submit their final report by March, 1984.



Amoretta M. Hoeber
Principal Deputy Assistant Secretary of the Army
(Research, Development and Acquisition)

PARTICIPANTS

Army Science Board

PROCESSING REQUIREMENTS DOCUMENTS STUDY

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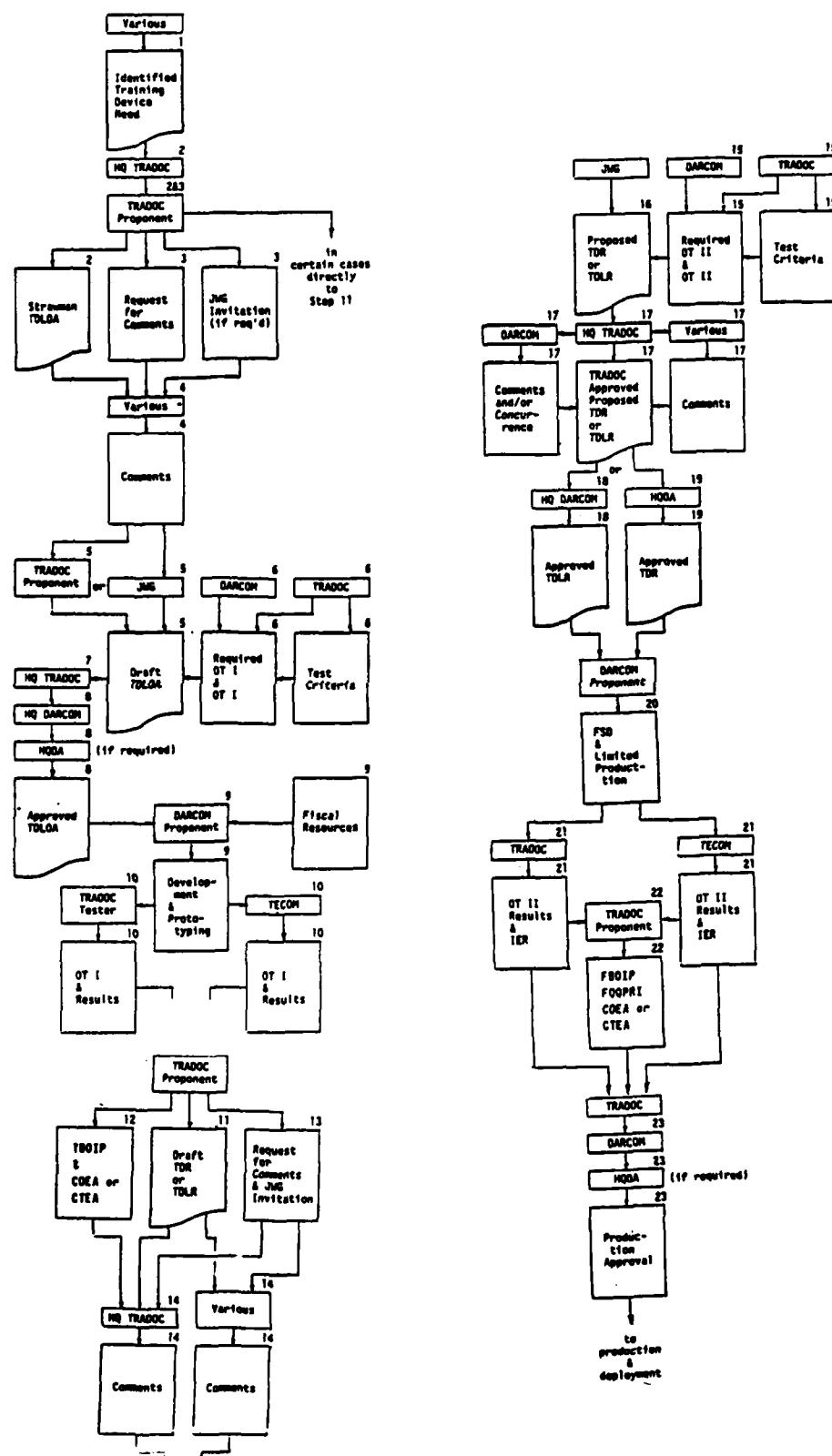
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TRAINING DEVICE REQUIREMENTS

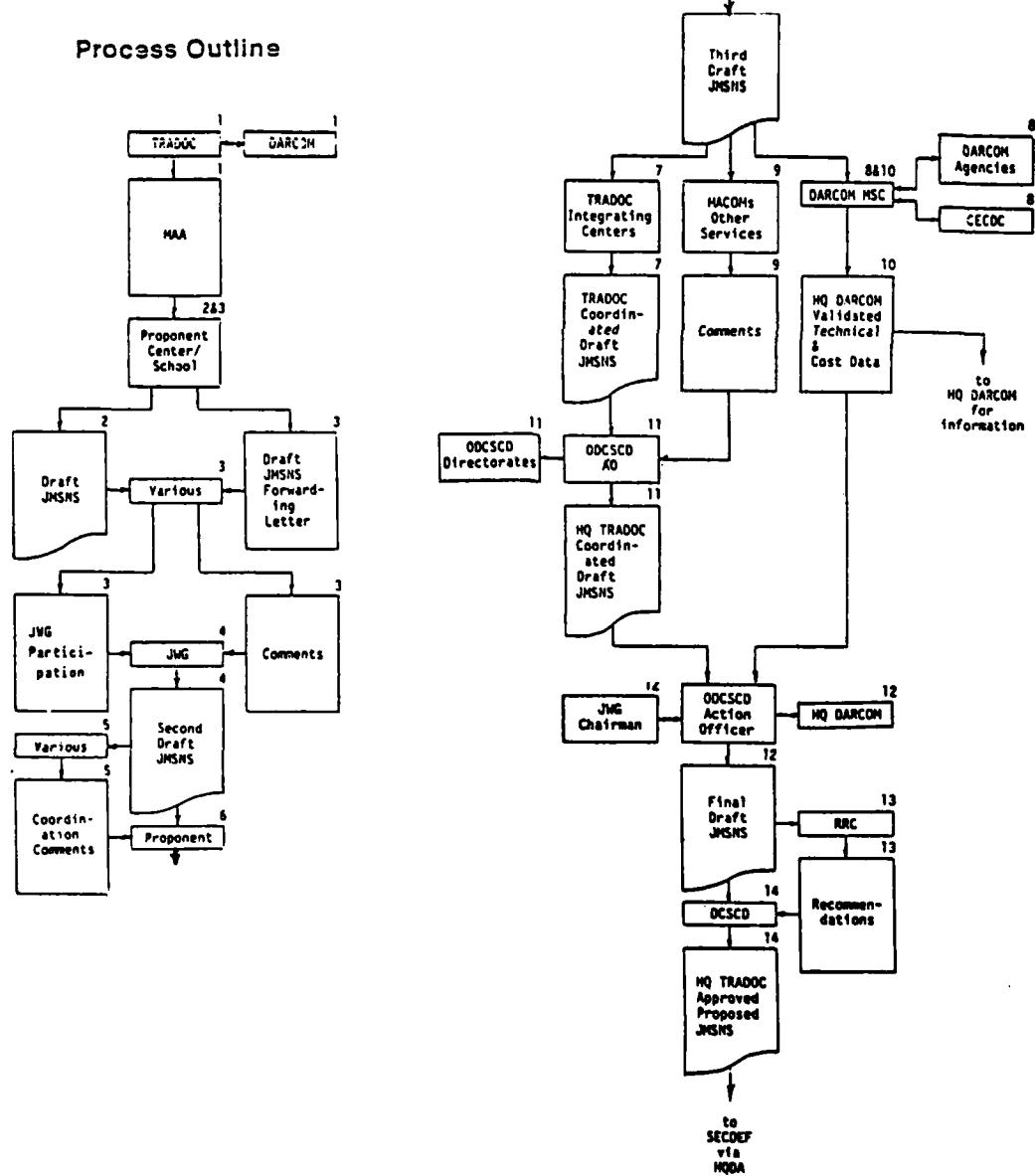
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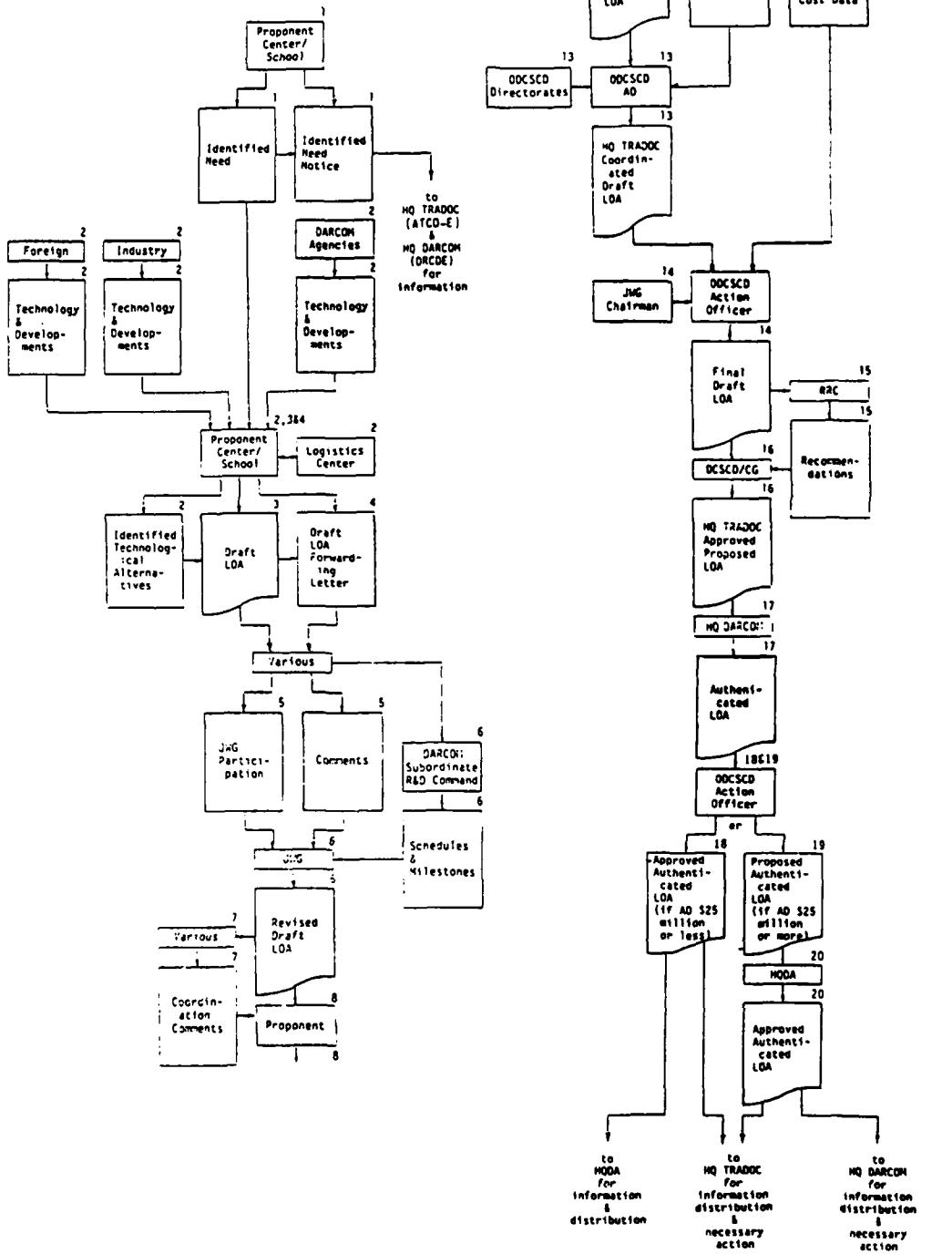
Process Outline



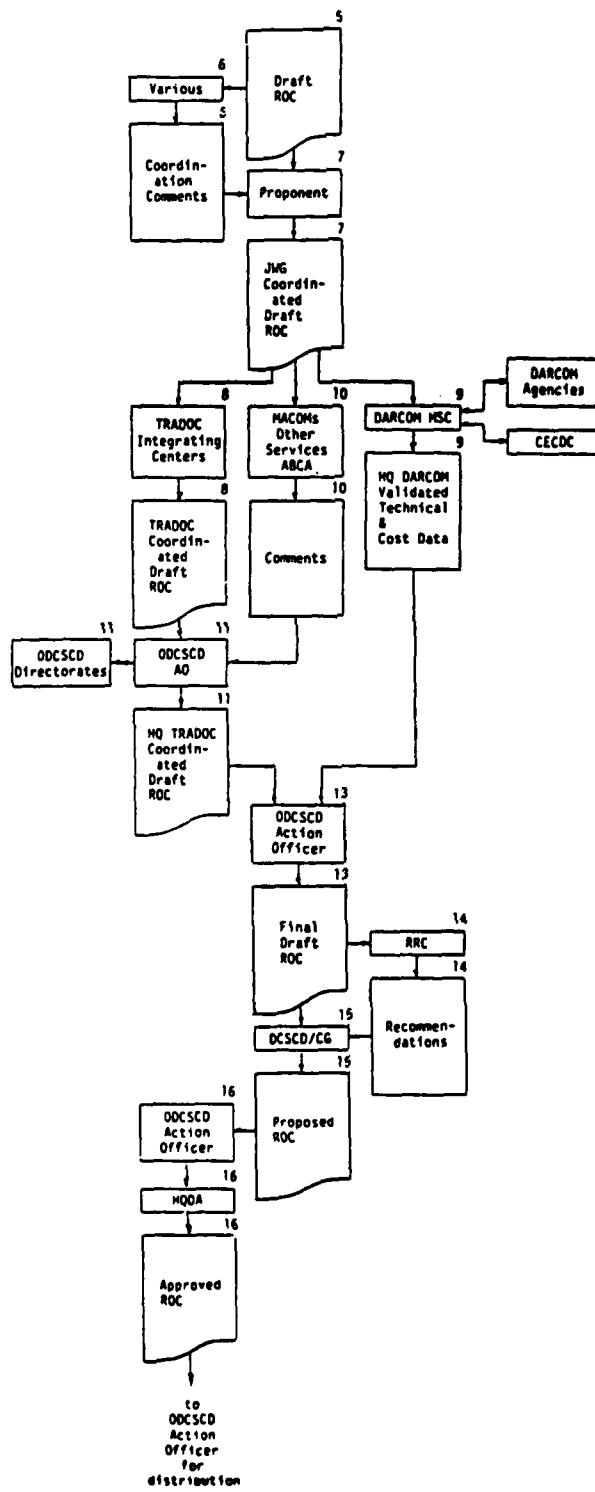
JUSTIFICATION FOR MAJOR SYSTEM NEW START(JMSNS)

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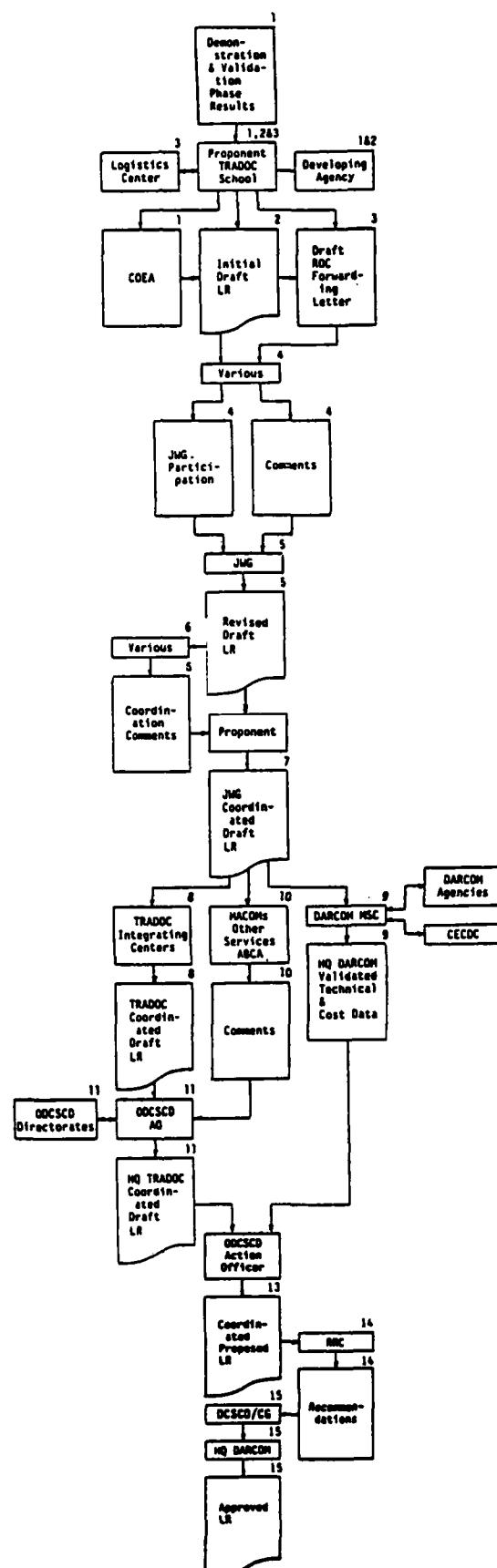


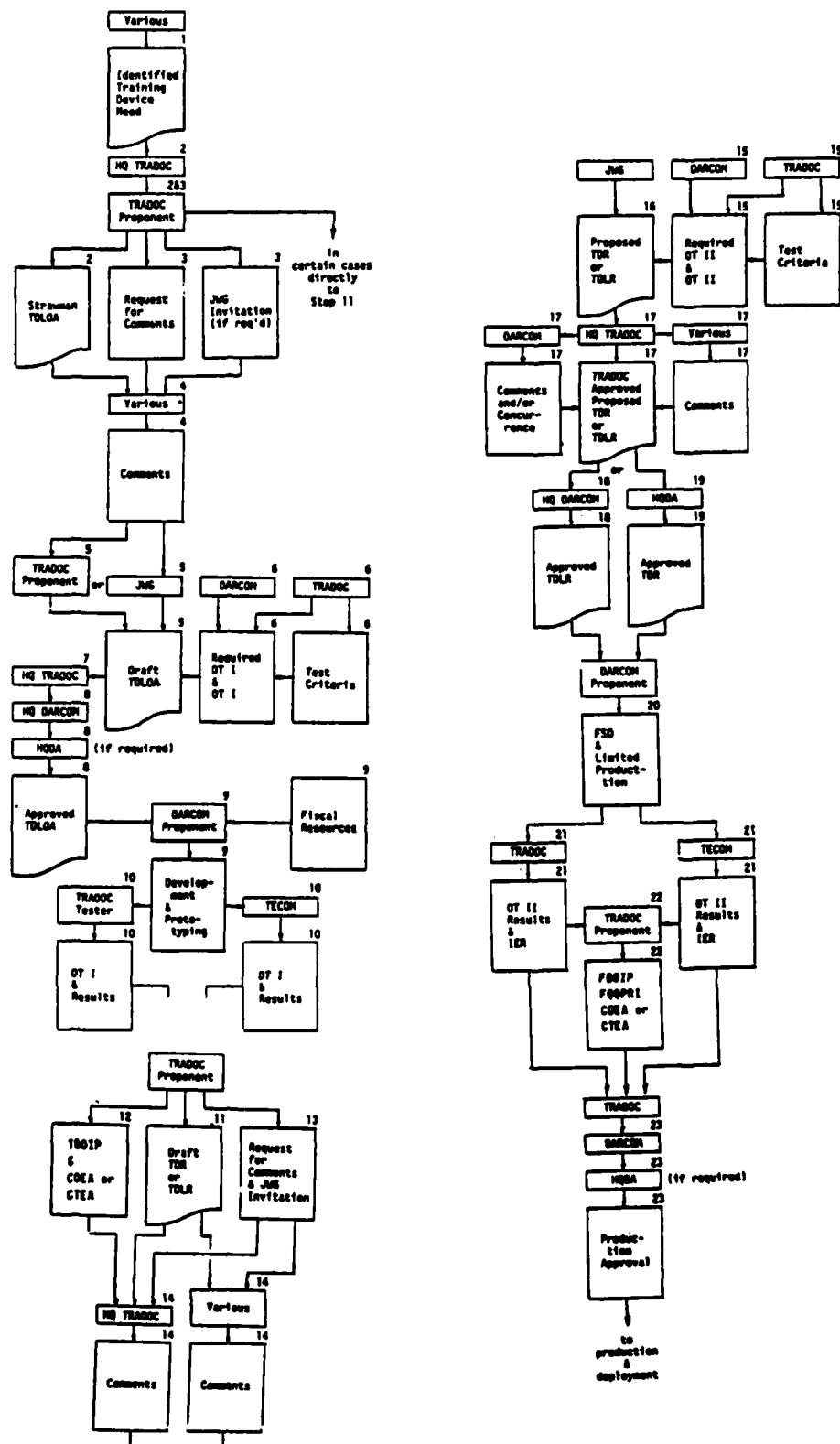
LETTER OF AGREEMENT (LOA)**Process Outline**

REQUIRED OPERATIONAL CAPABILITY (ROC)

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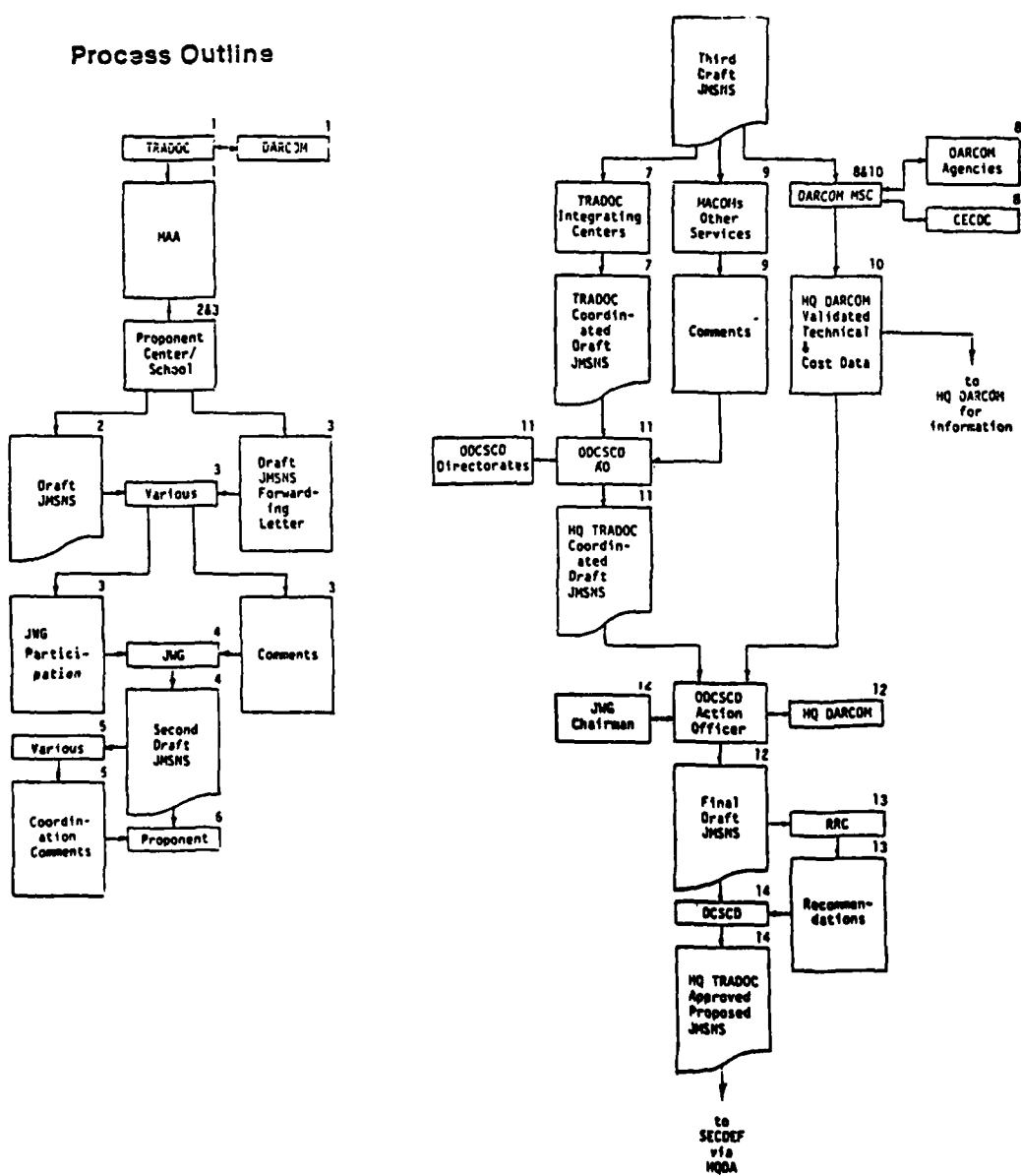
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TRAINING DEVICE REQUIREMENTS**Process Outline**

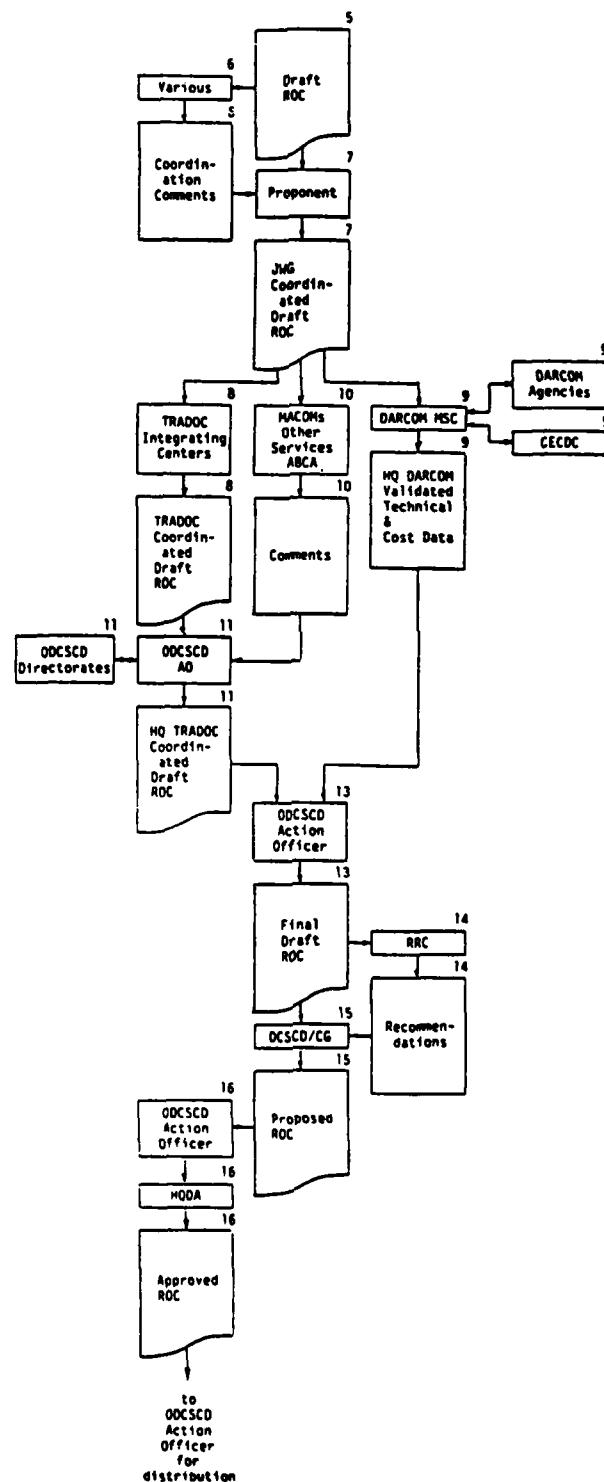
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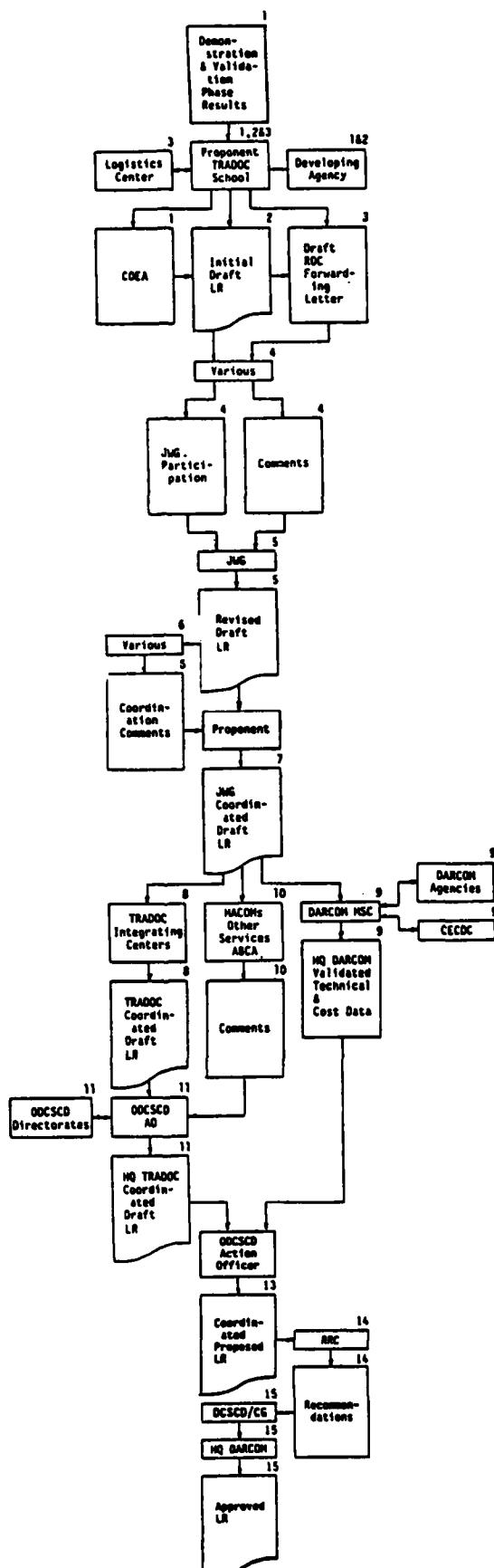


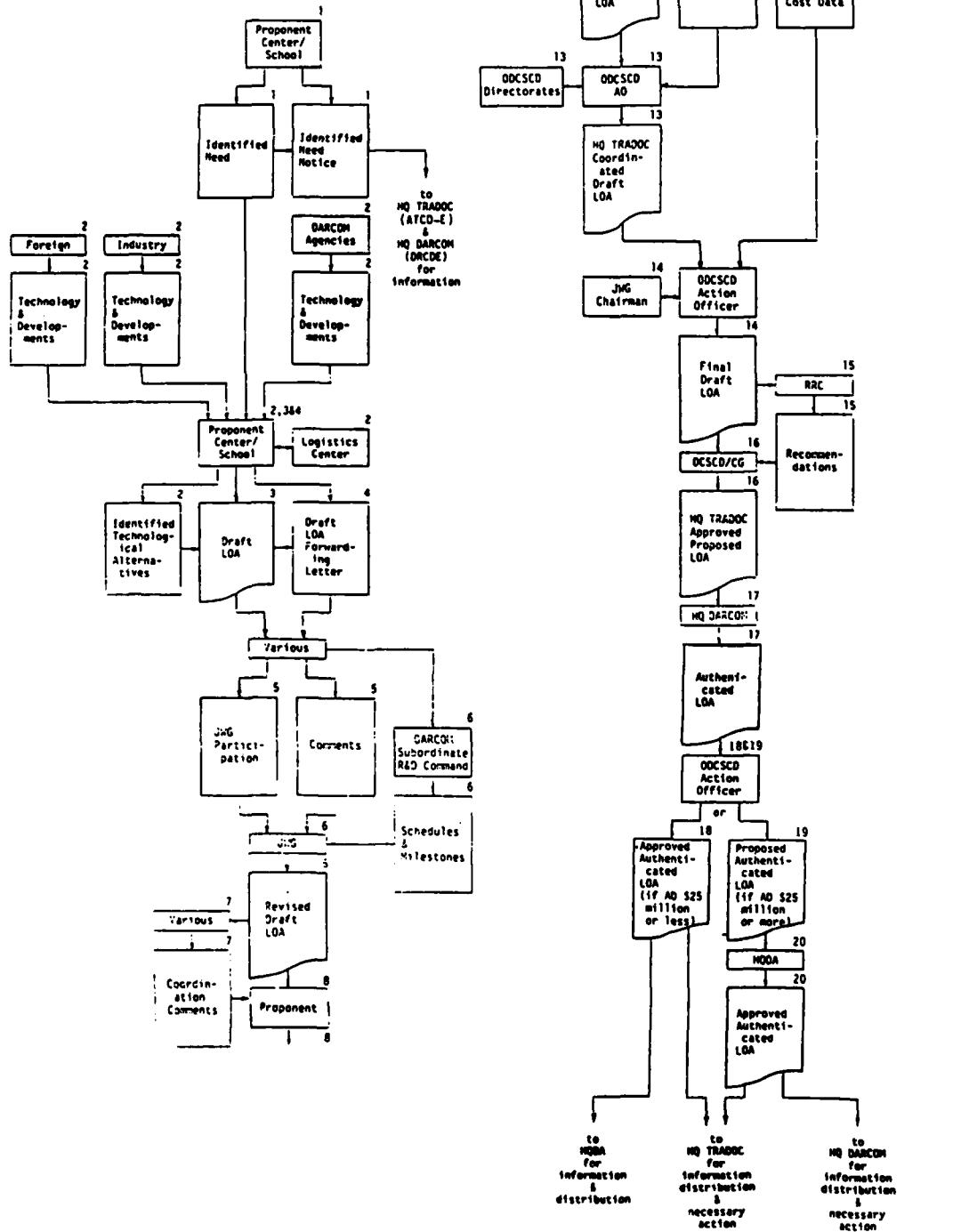
REQUIRED OPERATIONAL CAPABILITY (ROC)

Process Outline



Process Outline



LETTER OF AGREEMENT (LOA)**Process Outline**

GLOSSARY

AAO - AUTHORIZED ACQUISITION OBJECTIVE
AH-64 - US ARMY ATTACK HELICOPTER
AMC - US ARMY MATERIEL COMMAND
ASARC - ARMY SYSTEMS ACQUISITION REVIEW COUNCIL
"BLACK PROGRAM" - INFORMAL EXPRESSION DENOTING PROGRAMS HAVING SPECIAL SECURITY CLASSIFICATIONS
COEA - COST & OPERATIONAL EFFECTIVENESS ANALYSIS
COPPERHEAD - AN ARMY MISSILE SYSTEM
DAPAM - DEPARTMENT OF ARMY PAMPHLET
DARCOM - US ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND
DCP - DEVELOPMENT CONCEPT PAPER
DCSCD - DEPUTY CHIEF OF STAFF, COMBAT DEVELOPMENTS (TRADOC)
DLR - DRAFT, LETTER REQUIREMENT
DOD - DEPARTMENT OF DEFENSE
DROC - DRAFT REQUIRED OPERATIONAL CAPABILITY
DSARC - DEFENSE SYSTEMS ACQUISITION REVIEW COUNCIL
D.T. - DEVELOPMENT TEST/TESTING
ED - ENGINEERING DEVELOPMENT
FSD - FULL SCALE DEVELOPMENT
FY - FISCAL YEAR
FYDP - FIVE YEAR DEFENSE PLAN/PROGRAM
GLLD - GROUND LASER LOCATOR DESIGNATOR
HTTB - HIGH TECHNOLOGY TEST BED
ILS - INTEGRATED LOGISTIC SUPPORT
INSCOM - US ARMY INTELLIGENCE AND SECURITY COMMAND
IOC - INITIAL OPERATIONAL CAPABILITY
IPR - IN PROCESS REVIEW
IR&D - INDEPENDENT RESEARCH AND DEVELOPMENT
JMSNS - JUSTIFICATION FOR MAJOR SYSTEM NEW START
JOR - JOINT OPERATIONAL REQUIREMENT
JSMN - JOINT SERVICE MATERIEL NEED
JSOR - JOINT SERVICE OPERATIONAL REQUIREMENT
JWG - JOINT WORKING GROUP
LOA - LETTER OF AGREEMENT
LR - LETTER REQUIREMENT
M1 - AN ARMY TANK SYSTEM
MACOM - MAJOR ARMY COMMANDER
MENS - MISSION ELEMENT NEEDS STATEMENT
MN - MATERIEL NEED
MNA - MATERIEL NEED, ABBREVIATED
MNED - MATERIEL NEED ENGINEERING DEVELOPMENT
MNPI - MATERIEL NEED PRODUCT IMPROVEMENT
MSC/IC - MAJOR SUBORDINATE COMMANDS (AMC)/INTEGRATING CENTERS

OCS - OFFICE OF THE CHIEF OF STAFF
ODCSOPS - OFFICE, DEPUTY CHIEF OF STAFF FOR OPERATIONS & PLANS
ODCSPER - OFFICE, DEPUTY CHIEF OF STAFF FOR PERSONNEL
ODCSRDA - OFFICE, DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT
AND ACQUISITION
O&O - ORGANIZATIONAL AND OPERATIONAL
ORS - OPERATIONAL RESEARCH STUDY
OSD - OFFICE, SECRETARY OF DEFENSE
OT - OPERATIONAL TEST/TESTING
PAM - PAMPHLET
PATRIOT - PHASED ARRAY TRACKING INTERCEPT OF TARGETS/MEDIUM
TO HIGH ALTITUDE AIR DEFENSE
P3I - PREPLANNED PRODUCT IMPROVEMENT
PIP - PRODUCT IMPROVEMENT PROGRAM
PLOA - PRELIMINARY LETTER OF AGREEMENT
PM - PROGRAM MANAGER
PNVS - PILOT NIGHT VISION SYSTEM
PROC - PROPOSED REQUIRED OPERATIONAL CAPABILITY
QMR - QUALITATIVE MATERIEL REQUIREMENT
QRC - QUICK REACTION CAPABILITY
QRP - QUICK REACTION PROGRAM
RAM - RELIABILITY, AVAILABILITY, AND MAINTAINABILITY
RDTE - RESEARCH, DEVELOPMENT, TEST AND EVALUATION
ROC - REQUIRED OPERATIONAL CAPABILITY
SDR - SMALL DEVELOPMENT REQUIREMENT
SN-CIE - STATEMENT OF NEED - CLOTHING & INDIVIDUAL EQUIPMENT
SSC - SOLDIER SUPPORT CENTER
STINGER - AN ARMY MISSILE SYSTEM
TDLOA - TRAINING DEVICE LETTER OF AGREEMENT
TDR - TRAINING DEVICE REQUIREMENT
TELER - TELECOMMUNICATIONS REQUIREMENT
TRADOC - US ARMY TRAINING AND DOCTRINE COMMAND
TSM - TRADOC SYSTEM MANAGER
UH-60 - US ARMY UTILITY HELICOPTER
USAREUR - US ARMY EUROPE
"WHITE PROGRAM" - NONCOMPARTMENTED PROGRAM

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